

HIV/AIDS care has experienced enormous change since the beginning of the epidemic. Providers like the Boriken Neighborhood Health Center continue to evolve to offer a full array of medical and support services to their aging patients.



## Issues

### Aging

Wonderful advances in treatment have brought with them the promise of longer life for people living with HIV. The Ryan White HIV/AIDS Program has been there, growing with the people it serves and ensuring that the program's aging patients have many years of good health and happiness to look forward to, every step of the way.

## The Ryan White HIV/AIDS Program: Better With Age

Over the course of the past 16 years, as antiretroviral treatment has gotten much better, our focus has shifted from inpatient care to ambulatory care. We have been trying to identify people and link them to care so that they can start HIV treatment at the appropriate time. We provide people with the range of medical services that they need to stay healthy into their 60s, 70s and beyond. We are HIV specialists and general internists.

—Edward Telzak, MD, Chief of Infectious Diseases,  
AIDS Program Director, Bronx-Lebanon Hospital Center

The Ryan White Comprehensive AIDS Resources Emergency (CARE) Act was signed into law in 1990. Since then, Ryan White funding has built—and expanded—the capacity to provide multidisciplinary HIV care and treatment in the context of supportive services to those who need it most: poor and underserved people. In 2010, Ryan White entered its second decade, serving more than 500,000 people living with HIV/AIDS (PLWHA), 88 percent of whom were uninsured, and 73 percent of whom were racial and ethnic minorities.<sup>1</sup> As Dianne Weyer, a family nurse practitioner who has been caring for PLWHA since 1986, explains, “When I started, life expectancy [for HIV patients] was 18 months. One of my patients is now 60 years old. I asked him if he thought he’d live to be 60 when he was first diagnosed at 39; he said ‘no way.’”

Now that therapeutic advances have transformed HIV from a fatal infection into a chronic, manageable condition, more and more people are living with—rather than dying from—HIV/AIDS. Ryan White grantees and providers continue to meet the challenges of a dynamic epidemic by expanding management of an infectious disease into providing comprehensive primary care and wraparound services. Ryan White grantees and providers have “been able to modify the care delivery system” says Dianne Weyer. “Our infrastructure provides a great way to assess the individual; we do physicals and take a family history. We never used to do these things; they were not a staple of infectious disease management. Good primary care is really important, and Ryan White is a great place to deliver it.”



“When I grow up I want to be a doctor because they help people,” says Jonay.

“The current model of care has evolved from the early days of the epidemic,” says Dr. Edward Telzak, who has been at the forefront of the epidemic since it began. “In the Bronx—an HIV epicenter—we quickly realized the importance of providing a range of services, such as psychiatric and mental health care, nutrition, adherence, and legal programs. Now that we can take care of people’s HIV, and they are living longer, patients have the opportunity to get all the other diseases that the rest of the population is at risk for, such as colon, breast, or lung cancer, diabetes, and cardiovascular disease. We need to be complete physicians, not just HIV specialists. Ryan White funding has helped us achieve this transition and has allowed our medical sites to be medical homes for our patients.”

### Growing up with Ryan White

“Before ART [antiretroviral therapy], we spent more time at deathbeds and funerals than giving good news; we had more than 50 kids every year, and 30 of them died each year,” explains Ana Garcia, assistant professor of clinical pediatrics and the Ryan White Part D pediatric coordinator at the University of Miami Miller School of Medicine, Pediatric Infectious Disease & Immunology. The rate of perinatal transmission—when HIV is passed from mother to child during pregnancy, labor, delivery, or breast feeding—has dropped dramatically since 1994, when researchers reported that administering zidovudine (AZT) to HIV-positive mothers and their infants significantly reduced mother to child transmission (MTCT). “Research and training saved lives,” says Ira Schwartz, director of the Ryan White Southeast AIDS Education and Training Center housed at Emory University School of Medicine. “The perinatal epidemic was reduced in large part by National Institutes of Health (NIH) studies and Ryan White grantees and providers.” Schwartz adds,

We go into pediatrics because we get to watch kids grow up; if you worked with kids with chronic diseases you could fix them and help them live healthy lives. But HIV is a special kind of infection: Before we had the drugs, many kids ended up dying. Now we have the drugs, and our clinics have been an extended family for these kids. Ryan White has helped these kids grow up with HIV.

Ryan White grantees and providers rapidly implemented prevention of MTCT while caring for HIV-positive women and their families. As a result, MTCT rates in the United

States have been slashed from an all-time high of 1,650 cases in 1991 to an estimated 130 cases in 2009.<sup>2,3</sup> At New York’s Bronx-Lebanon Hospital Center, “We still deliver about 50 babies each year to HIV infected women,” says Telzak. “By having a talented nurse midwife and high-risk obstetrician on site, only one baby born in the last 3 years was infected.”

Thanks to the tireless work of Ryan White grantees and providers, many perinatally infected children have grown into adulthood. As of 2005, 6,051 perinatally infected people were living in the United States.<sup>4</sup>

“Kids who were perinatally infected in the 1980s and early 1990s have grown up to be adolescents and young adults, because they have gotten good HIV care at Ryan White clinics,” says



The Ryan White HIV/AIDS Program’s Part D Program is dedicated to serving the needs, and striving to create a healthier future for women, infants, children, youth, and their families.





The advent of antiretroviral therapy has enabled many people with HIV to live longer and healthier lives.



Schwartz. “But they have had chronic HIV infection for 20 years or more; their issues are very different from people who were infected in their 20s and 30s and are now in their 50s and 60s, or the adolescents who get HIV as teens.”

Although ART works for children, the long-term consequences of its use at an early age are unknown, and short-term complications of ART have been reported. Researchers have identified an increased cardiovascular disease risk profile among HIV-positive children and adolescents on ART.<sup>5,6</sup> Children have developed ART-associated metabolic abnormalities, such as lipodystrophy (abnormal fat distribution), lipoatrophy (localized fat loss), insulin resistance, and hyperlipidemia.<sup>7,8,9</sup> The risk for bone loss is higher for HIV-infected children and adolescents; when peak bone mass is achieved, bone cell turnover is higher in childhood than adulthood. Low bone mineral density (BMD) and low bone mineral content (BMC) have been reported in perinatally infected children—especially boys.<sup>10,11,12,13</sup> Vitamin D deficiency, which is common among perinatally infected children, is associated with low BMD and BMC; it is caused by ART and HIV itself.<sup>14,15</sup>

Caring for perinatally infected adolescents can be challenging and requires the wraparound services that Ryan White HIV/AIDS Program provides. Developmental, behavioral, and psychiatric disorders are more prevalent among perinatally exposed and infected adolescents than their nonexposed, noninfected peers; these disorders worsen adherence to ART, particularly in adolescents.<sup>16,17,18,19,20,21</sup>

“Adherence to medications and health care is critical; having insight into their adolescent issues and culture is crucial for getting them into care and on meds that are keeping them healthy and making them less infectious. Kids have adherence issues,” says Schwartz. “Some have gone through lots of drugs and have extensive drug resistance.” In fact, antiretroviral drug resistance has been found in treatment-naïve and pre-treated children.<sup>22,23</sup>

“Teens with chronic disease have to develop self-efficacy. Having insight into adolescent issues and culture is crucial for getting them into care” says Schwartz. Supportive relationships and good communication with their caregivers increases adherence among

children and teens.<sup>24,25</sup> As with adults, adherence among children and adolescents is improved by strong patient–physician relationships.<sup>26,27</sup>

“I can teach you HIV, but I can’t teach you to care and love children and their families; you have to bring that with you,” says Garcia. “We have a family-centered model—you can’t work with kids without their families. But sometimes you are the surrogate everything—parent, aunt, grandparent. Kids always look for a family member when their own family is not optimum.”

Schwartz agrees. “Our clinic has become an extended family,” she says. “Thanks to Ryan White we have wonderful clinical and support services; these kids see us as people who support them, don’t judge them, and help them to grow up with HIV. They have few adult role models, so they come in or call for help with other things in their lives. We help them to grow up and become more independent. Ryan White has provided continuity.”

## Ryan White's Aging Workforce

The dedicated medical providers at Ryan White HIV/AIDS Program-funded clinics have been delivering HIV primary care for over two decades; they, too are aging with the HIV epidemic.<sup>30</sup> Their experience is invaluable. Nurse practitioners and physician assistants with HIV expertise provide care that is considered to be superior to that provided by nonspecialist physicians.<sup>31</sup> Many of these providers will be retiring in the coming years, without a sufficient number of experienced providers to replace them.

The very purpose of the Living History Web Site is to compile information about the epidemic and HRSA's history addressing it. HRSA's AIDS Education and Training Centers (AETCs) have also been working to educate new HIV providers as well as primary care providers around the issues of HIV. In addition, HRSA held a stakeholder meeting to identify workforce shortage issues and how best to address them. One innovation has been the HRSA-funded Health Workforce Information Center. (To read about these efforts and others, see the HRSA CAREAction newsletter on workforce capacity and HIV [available as a PDF here](#).)

Yet the transition from pediatrics to adulthood can be tricky. "It is hard to transition from a children's clinic to the adult world. Thanks to Ryan White, we have a multidisciplinary adolescent clinic—but at a certain time, you have to go downstairs to the adult clinic," says Schwartz.

In Florida, Garcia and her colleagues created a special program to help perinatally infected kids transition from pediatric to adult care. "Transitioning kids to adult care is hard. We have a tiny, specialized transition clinic that delivers HIV primary care. It's a yearlong dress rehearsal for 24-year-olds. A case manager helps, but when they are 25, they are assimilated into our 300-patient clinic." (To read the *HRSA CAREAction* newsletter on transitioning from adolescent to adult care, see the [PDF available here](#).)

Now, Ryan White providers are helping perinatally infected young adults start their own families. "Our kids have a new generation of children," says Ana Garcia. "I've started a custom; the girls bring in their ultrasounds, and I put them together with photos of them with their babies. It is so wonderful to see these kids grow up and have a chance to have HIV-negative babies."

## Growing Older with Ryan White

The HIV epidemic in the United States is maturing. People are living longer, and acquiring HIV later in life. In 2010, 8,074 of the estimated 48,298 new HIV diagnoses were in people age 50 and older.<sup>28</sup> By 2015, one-half of all PLWHA in the United States will be over 50 years of age.<sup>29</sup> Ryan White grantees and providers are reaching clients who reflect the age-specific demographics of the HIV epidemic. In 2010, 50 percent of Ryan White HIV/AIDS Program clients were age 45 or older.

In 1984, we were watching people die. Now, people are aging with HIV disease. The paradigm has shifted: It's not just about CD4 cell count and viral load. Ryan White medical providers have gone back into their bag of tricks, to manage all of the things that come with aging—and HIV. Their patients are not 25 years old anymore; they are 55 years old.

—Diana Travieso Palow, Chief HIV Education Branch,  
Division of Training and Technical Assistance, HIV/AIDS Bureau/HRSA

Many people over 50 years of age have been living with HIV/AIDS for decades, while others are newly infected or recently diagnosed. Regardless of the duration of their HIV infection, these older adults are especially vulnerable to comorbidities associated





As patients age with HIV, they are now having to address all of the other ailments associated with old age.

with aging, such as cardiovascular, renal and liver disease; diabetes; hypertension; lipid abnormalities; non-AIDS related malignancies; frailty; bone loss; and dementia. Ryan White grantees and providers have risen to the challenge of caring for people living—and aging—with HIV.

### The New Epidemic

An absence of prevention messages targeted to older people may reinforce the perception that they are not at risk, although HIV and AIDS continue to increase among people over 50 years of age. (See Tables 1 and 2.)

Social and biological issues can be contributing factors. For example, many divorced or widowed older people have raised children who are now adults, and they have time to enjoy dating. Since birth control is no longer necessary for postmenopausal women, they may forgo condom use although hormonal changes that thin vaginal walls increase the risk of HIV for older women. In turn, medications for erectile dysfunction facilitate sexual activity for older men.

Symptoms of HIV may be confused with aging or other diseases, leading to delayed diagnosis of HIV. Only one-third of older adults with diabetes or cardiovascular disease—both of which can be worsened by HIV—have been tested.<sup>33</sup> Post-menopausal women are less likely to be tested for HIV than their younger counterparts.<sup>34</sup> In fact, people over 50 years of age are more likely to have lower CD4 cell counts—and AIDS—when they are diagnosed than younger people.<sup>35</sup> According to the CDC, as of

<div>TABLE 1</div> <div>ESTIMATED HIV DIAGNOSES AMONG PEOPLE AGE 50 AND OVER, 2007–2010</div>				
Age at Diagnosis	2007	2008	2009	2010
50–54	3,806	3,651	3,658	3,767
55–59	2,114	2,155	2,144	2,217
60–64	1,019	1,082	988	1,171
≥65	906	858	831	887
Total	7,845	7,746	7,621	8,042
Source: U.S. Centers for Disease Control and Prevention (CDC). <i>HIV Surveillance Report</i> , 2010; vol. 22. Table 1b. March 2012. <a href="#">Available as a PDF here.</a>				

<div>TABLE 2</div> <div>ESTIMATED AIDS DIAGNOSES AMONG PEOPLE AGE 50 AND OVER, 2007–2010</div>				
Age at Diagnosis	2007	2008	2009	2010
50–54	3,590	3,647	3,857	3,902
55–59	1,987	2,091	2,146	2,138
60–64	996	1,054	1,026	1,128
≥65	786	821	844	913
Total	7,359	7,613	7,873	8,081
Source: CDC. <i>HIV Surveillance Report</i> , 2010; vol. 22. Table 1b. March 2012. <a href="#">Available as a PDF here.</a>				





Adults over age 50 accounted for nearly 17 percent of the total HIV cases diagnosed in 2010.<sup>137</sup>

2008 people age 50 and older were most likely to receive an AIDS diagnosis within 12 months of their HIV diagnosis. (See Table 3.)

TABLE 3 ESTIMATED TIME TO AN AIDS DIAGNOSIS AFTER A DIAGNOSIS OF HIV INFECTION AMONG PEOPLE 50 AND OVER, 2009		
Age at Diagnosis	2008	2010
50–54	3,647	3,902
55–59	2,091	2,138
60–64	1,054	1,128
≥65	821	913
Total	7,613	8,081
Source: CDC. <i>HIV Surveillance Report</i> , 2010; vol. 22. Table 1b. March 2012. <a href="#">Available as a PDF here.</a>		

“People are aging with HIV disease—we are seeing more chronic conditions, such as heart disease and diabetes. Is this simply part of aging, or is it because of secondary effects of ART that can precipitate some of these diseases, or is it HIV itself?” asks Palow. As Weyer explains, “I’m seeing more primary care issues, such as diabetes, hyperlipidemia, and arthritis. I never used to see these things... how much is due to aging, how much has to do with HIV? I don’t know—‘why’ doesn’t matter as much, because the person is right there and you are dealing with it.”

Growing Old With HIV

ART has significantly extended life expectancy among HIV-positive people, especially when they are diagnosed and treated before they develop AIDS.<sup>36,37</sup> However, older people remain at higher risk for AIDS or death. (See Table 4.)

TABLE 4 RISK OF PROGRESSION TO AIDS OR DEATH 5 YEARS AFTER ART INITIATION BY BASELINE HIV RNA, NADIR CD4 CELL COUNT AND AGE* (16–29 VERSUS ≥50)		
CD4 cell count	Viral load <100,000 copies/mL	Viral load ≥100,000 copies/mL
<25cells/μl	19.3% versus 29.4%	23.4% versus 35.1%
25–49cells/μl	16.9% versus 25.9%	20.5% versus 31.1%
50–99cells/μl	15.7% versus 24.1%	19.1% versus 29%
100–199 cells/μl	10.8% versus 16.9%	13.2% versus 20.6%
200–349cells/μl	6.7% versus 10.7%	8.3% versus 13.1%
≥350cells/μl	5.6% versus 8.9%	6.9% versus 11%
*Applicable only to HIV-1 positive patients with no previous antiretroviral therapy. No injection drug use (which increases the risk of progression to AIDS or death); CDC disease stage A or B.		
Source: University of Bristol. Antiretroviral Therapy Cohort Collaboration (ART-CC). <i>Risk Calculator from Start of ART</i> . <a href="#">Available as a PDF here.</a> Accessed on February 17, 2012.		

## HIV, Aging, and the Immune System

Premature aging among HIV-positive people is actually related to premature aging of the immune system, which leads to a condition called immunosenescence. Premature aging of the immune system begins with immune activation, a short-term process that stops when wounds heal, or when recovery from an infection is complete. After decades of exposure and response to a variety of infections, a tired immune system works harder, but is less effective, causing a state of chronic inflammation. Researchers have linked chronic inflammation with age-associated conditions in the general population, including frailty, cardiovascular disease, bone loss, and cancer.<sup>49,50,51</sup>

Some chronic viral infections, such as Epstein-Barr, cytomegalovirus and HIV cause ongoing immune activation.<sup>52,53</sup> In PLWHA, immune activation and inflammation do not fully resolve with use of ART.<sup>54,55</sup> Immune activation and inflammation cause immune dysregulation—an immune response that is too strong, or too weak—and immunosenescence, which is “an impairment in immunity as a result of age-associated changes in function in a variety of cells; it is a phenomenon of decreased function, involving changes to both innate and adaptive immunity and a dysbalance between the two arms.”<sup>53</sup> Immunosenescence is seen in the elderly and in people with HIV.<sup>56,57</sup>

Avoiding immune deficiency is important, especially for older people who are prone to develop non-AIDS related complications. A low CD4 cell count increases the risk for liver failure (even in people who are not coinfectd with viral hepatitis), heart disease, and certain types of cancer.<sup>38,39,40</sup>

The risk for polyopathy (the presence of at least two age-associated conditions, such as cardiovascular and kidney disease, hypertension, diabetes, and bone fracture) is similar for an HIV-positive person who is 40 years old and a 55-year-old HIV-negative person.<sup>44</sup> As the incidence of AIDS-related malignancies has dropped due to the immunological benefits of antiretroviral therapy, the incidence of non-AIDS-related malignancies has increased among the aging population of PLWHA.<sup>46,47,48</sup> As Telzak explains,

One of the most recent and important contributions of HIV medicine is how it has informed all of medicine about the negative outcomes associated with ongoing inflammation, such as diabetes, liver, kidney, and cardiovascular disease. Though still very much in the early stages of study, this might have very broad implications; it could revolutionize how people think about early intervention for diseases, and that there may be unifying risks for many seemingly different kinds of diseases. In many ways, the field of HIV may really be onto something that could have a great impact on medicine.



Researchers are working to determine the contributions of HIV itself, long-term use of antiretroviral therapy, family history, and lifestyle to premature aging. At the same time, clinicians are working with their patients to prevent and manage these conditions. The good news is that ART is effective in suppressing HIV, regardless of a person's age. However, immune recovery is known to be slower in older people, leaving older patients who are diagnosed with a low CD4 cell count especially vulnerable to a blunted CD4 response.

### HIV Treatment Guidelines: Recommendations for Older Patients

The March 2012 *Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents* now includes a section on key considerations when caring for older HIV-infected patients. It recommends initiation of ART in all patients over 50 years of age regardless of CD4 cell count, due to a greater risk for non-AIDS related complications and potentially blunted immunological response to ART.<sup>58</sup>



In 2010, 47 percent of all Ryan White HIV/AIDS Program clients were 45 to 64 years of age and 3 percent were over the age of 65.

In 2011, the HIV and Aging Consensus Project's *Recommended Treatment Strategies for Clinicians Managing Older Patients with HIV* was released. It recommends:

- Initiation of ART for all patients older than 50, with a CD4 cell count below 500 cells/mm<sup>3</sup>
- Initiation of ART at any CD4 cell count for patients with AIDS-defining illness, HIVAN, or chronic HBV infection.
- Consideration of ART initiation for patients over age 50 with a CD4 count greater than 500 cells/mm<sup>3</sup>; factors favoring treatment initiation include plasma HIV RNA levels greater than 50,000 copies/ml, greater than 100-point decline in CD4 count in prior 12 months, or risk factors for cardiovascular disease.<sup>59</sup>

### Polypharmacy

Polypharmacy—the use of multiple medications—is common among PLWHA on ART, especially those over 50 years of age.<sup>60</sup> Clinicians can minimize the risk of drug–drug interactions from polypharmacy by carefully selecting antiretroviral agents. Clinically significant drug–drug interactions—requiring close monitoring or dose adjustment—are more likely to occur with protease inhibitor-based regimens than non-nucleoside inhibitor- or raltegravir-based regimens, and in people who are taking less than 5 medications in addition to antiretroviral therapy.<sup>61,62</sup> In addition, drug–drug interactions between antiretroviral agents, drugs used to prevent or treat opportunistic infections, insulin and insulin sensitizing medications for diabetes, antihypertensive agents, lipid lowering drugs, methadone, and recreational or psychotropic drugs—many of which share a metabolic pathway—may occur.<sup>63,64,65,66,67</sup>



### Cardiovascular Disease

Cardiovascular disease (CVD) has become a leading cause of death among HIV-positive people; family history, lifestyle, and inflammation from HIV itself contribute to the risk. Smoking and low levels of high-density lipoprotein cholesterol (HDL-C), which are risk factors for CVD, are more prevalent among PLWHA than the general population.<sup>68,69,70,71</sup> Although benefits of ART outweigh the risks, certain antiretroviral agents cause metabolic changes, such as lipid elevation, insulin resistance, visceral adiposity, and subcutaneous fat loss.<sup>72,73</sup>

Ryan White HIV primary care providers play a life-saving role in prevention and management of CVD among PLWHA. Strategies for CVD risk management do not differ by HIV status (see Box “ABCs of CVD Risk Management”). Clinicians can work with



## ABCs of CVD Risk Management

**A: Aspirin** when indicated

**B: Blood** pressure control

**C: Cholesterol** management;  
cigarette smoking cessation

**D: Diabetes** and prediabetes  
management

**E: Exercise**

Source: Post WS. Perspective:  
predicting and preventing  
cardiovascular disease in HIV-  
infected patients. *Top Antivir  
Med.* 2011 Dec;19(5):169-73.

patients to reduce the risk of CVD through changes in diet, regular exercise, and pharmacologic therapy. Smoking cessation is especially important, since HIV increases the risk for chronic obstructive pulmonary disease and lung cancer.<sup>74,75,76</sup> Quitting smoking has been shown to decrease the risk of heart attack and stroke among people with HIV/AIDS.<sup>77</sup> Providers can play an important role in helping patients to quit: When trained clinicians provide smoking cessation plus counseling and pharmacotherapy, patients are more likely to stop smoking and less likely to relapse.<sup>78</sup>

## Renal Disease

Renal abnormalities are common among people with HIV/AIDS and are linked with greater risk for chronic kidney disease (CKD), cardiovascular disease, progression to AIDS, and increased mortality.<sup>79,80,81,82</sup> HIV itself, as well as traditional risk factors, such as genetic propensity, aging, diabetes, hypertension, use of nephrotoxic medication, cigarette smoking, and cocaine use, contribute to risk for and incidence of CKD among PLWHA.<sup>83,84,85</sup> CKD is most prevalent among HIV-positive African-Americans, and certain antiretroviral agents may worsen it.<sup>86,87</sup> Coinfection with hepatitis C virus (HCV) increases the risk and severity of renal disease in HIV-positive people.<sup>88,89</sup> Renal impairment can complicate HIV treatment, since it increases the risk for drug–drug interactions.<sup>90,91</sup>

Early identification and management of renal abnormalities allow clinicians to prevent or delay worsening of renal disease.<sup>84</sup> Clinicians can screen, monitor, and manage kidney disease in HIV-positive patients, using recommendations produced by the HIV Medicine Association of the Infectious Diseases Society of America. Their recommendations include initial assessment for kidney disease, annual screening for patients at high risk for development of kidney disease, and individualized treatment and referral for patients with kidney disease.<sup>92</sup>

## Liver Disease

Aging, HIV itself, and ART contribute to liver damage.<sup>93</sup> Many antiretroviral agents are metabolized through the liver; long-term use of ART, especially didanosine, have been linked to development of serious liver damage in HIV-positive people, as have heavy alcohol consumption, nonalcoholic fatty liver disease, and AIDS-related infections.<sup>94,95,96,97</sup>

Viral hepatitis is a common coinfection among PLWHA. Up to 10 percent of HIV-positive people are coinfecting with HBV.<sup>98</sup> HBV coinfection doubles the risk of progression to AIDS or death among HIV-positive people.<sup>99</sup> Fortunately, HBV can be managed with HIV, since some antiretroviral agents are active against HBV as well as HIV.<sup>100</sup>

Up to 30 percent of HIV-positive people are coinfecting with hepatitis C virus (HCV). HIV increases the risk for, and accelerates the rate of, serious liver damage; this includes cirrhosis, liver cancer, and liver failure in people with HCV.<sup>101,102,103</sup> Although the risk for ART-associated hepatotoxicity is increased by HCV coinfection, ART may delay HCV progression.<sup>104,105</sup>

HCV can be treated—and in some cases, cured—in HIV-positive patients, especially in the first six months after infection (known as the acute phase) or before cirrhosis has developed.<sup>105</sup> Direct-acting antivirals (DAAs) that increase efficacy of pegylated interferon and ribavirin are in late-stage development in people with HIV, and are likely to significantly increase cure rates, although clinicians must be wary of additive toxicity, and drug–drug interactions between antiretroviral agents and DAAs.<sup>106,107,108</sup>

## Bone Loss/Frailty

ART and HIV itself are risk factors for osteoporosis.<sup>109,110</sup> As with other co-occurring conditions among PLWHA, inflammation and immune dysregulation are culprits.<sup>111</sup> Experts recommend a DXA scan for all HIV-positive (especially those with a history of fracture), postmenopausal women, and HIV-positive men who are 50 years old or

## Ryan White and HCV Coinfection

When it comes to caring for HIV/HCV coinfecting patients, Ryan White grantees and providers have been at the forefront. Now they can turn to an important resource from HRSA, *A Guide for Evaluation and Treatment of Hepatitis C in Adults Coinfected with HIV*, [available as a PDF here](#). Continuing this dedicated effort to learn best practices around HIV/HCV coinfection, HRSA funded a Special Projects of National Significance (SPNS) initiative on this topic.

To learn more about the initiative [visit here](#).

younger, to be repeated every 2 to 5 years. Clinicians can support bone health by recommending adequate calcium and vitamin D intake, weight-bearing exercise, limited alcohol intake, and smoking cessation.<sup>112</sup>

Frailty, a syndrome which includes increased vulnerability to stressors and greater risk for disability and death, is likely to develop significantly earlier in people with HIV than in the general population.<sup>113,114</sup> Among PLWA low CD4 cell count despite use of ART predicts frailty, as does abnormal fat distribution and central obesity—which may be modifiable with exercise and dietary changes.<sup>113,114</sup> Patients with frailty are likely to have polypathology, cognitive impairment, and a prior opportunistic infection, and be on multiple medications.<sup>115</sup>



## Overlapping Issues: Substance Use Disorders, Depression, and Cognitive Impairment

“Ryan White has allowed us to have committed staff who do both in-reach and out-reach; they work with patients who are hard to engage in care due to their issues with substance use and mental health,” says Telzak. As he explains,

In the Bronx, we have medical case management and outreach for our 250 most challenging patients, those who are least likely to be linked to care, stay in care and take medications. We often meet patients while they are hospitalized—sometimes with opportunistic infections that were exceedingly common prior to highly active antiretroviral therapy and now are quite unusual—and keep them in ambulatory care, help them take their antiretroviral and psychiatric medications, and get them into treatment for substance use disorders. The outcomes that increasingly matter to Ryan White are not just process indicators or the number of patients you referred; they want to see the number of people engaged in care with undetectable HIV viral loads. Ryan White has linked social service outcomes to medical outcomes, which is very important.

The overlap of substance use disorders, mental illness, and cognitive impairment is well known. Ryan White HIV/AIDS Program grantees and providers have a wealth of experience in delivering HIV care and treatment to people suffering from these conditions.

## Substance Use Disorders

More than one-third of all AIDS cases in the United States are directly or indirectly attributed to injection drug use (IDU).<sup>116</sup> Buprenorphine/naloxone is a valuable tool for clinicians who are treating opioid-dependent patients, since qualified physicians



Injection drug use has historically been a leading HIV transmission route.

can administer it in the context of HIV primary care. A Health Resources and Services Administration (HRSA)-funded demonstration project at Ryan White clinics reported that administering buprenorphine reduced opioid use, increased initiation of ART, and improved certain quality of care indicators (e.g. Hepatitis A and pneumococcal vaccination, CD4 and viral load monitoring, injection drug use risk reduction counseling, and HIV clinic visits).<sup>117,118,119</sup> (A monograph on best practices from the project can be found [as a PDF here.](#))

Polypathology is common among current and former IDUs as they age, especially if they are HIV-positive. Among the general population, up to 13 percent of adults ages 25 and over are estimated to have two or fewer of the following: arthritis, cancer, diabetes, hypertension, heart disease, obstructive pulmonary disease, and psychiatric disorders; 3 percent to 5 percent of the population have three or more of these conditions, and prevalence of polypathology increases with age.<sup>120</sup> In contrast, 61 percent of HIV-positive current and former IDUs had two or more of the following conditions: diabetes, obstructive lung disease, liver disease, anemia, obesity, kidney dysfunction, and hypertension; and approximately 30 percent had at least three conditions—a rate that is 6 to 10 times greater than that of the general population (and significantly higher than a matched group of HIV-negative current and former IDUs).<sup>121</sup>

Alcohol use is prevalent among PLWHA; rates of heavy drinking are twice as high among HIV-positive people versus the general population.<sup>122</sup> Problem drinking is associated with poor adherence to antiretroviral therapy; detectable HIV RNA (viral load); and low CD4 cell count.<sup>123,124,125</sup> Clinicians can use screening questionnaires, such as the CAGE and AUDIT-C, to identify patients with dangerous alcohol intake.

### Depression

Depression is more common among HIV-positive people than the general population, and rates of depression among PLWHA increase with aging.<sup>126,127,128</sup> Depression worsens adherence to ART, but adherence can be improved by treatment with a selective serotonin reuptake inhibitor (SSRI).<sup>129</sup> “We don’t even think about patient education taking longer with older patients. We have to go slowly. My brain doesn’t work as well as it did 30 years ago, and neither do theirs,” says Weyer.

### Cognitive Impairment

Older PLWHA are more likely to have cognitive impairment than their HIV-negative peers; deficits in attention, memory, executive function, and speed of information processing have been reported in several studies.<sup>130,131,132</sup> People over 50 years of age are three times more likely to be adherent to ART than their younger counterparts, but they are also more likely to experience cognitive impairment, which more than doubles the risk for poor adherence.<sup>133,134,135</sup>

Ryan White HIV/AIDS Program grantees and providers play an important role in helping older HIV patients prevent or mitigate cognitive impairment by treating depression and other comorbidities, counseling them to reduce alcohol and substance use, and promoting healthy eating.<sup>136</sup>

### Ryan White and a Dynamic Epidemic

“There’s been a paradigm shift in how you care for people with HIV; we really need primary care providers. With older adults, you have to care for the whole person—their HIV disease and other things that may or may not be related to their HIV—everything that comes with aging,” says Travieso Palow. “It is better to have providers with a larger knowledge base, who can do it all.”

As Telzak explains, “Models of care for HIV certainly already contribute to models of care for all chronic diseases, and there is a lot more to learn from what has been created in HIV care coordination. Ryan White, in partnership with HIV providers, has





established the concept of a medical home, and the ability to get better outcomes in patients who consume most of the medical resources.”

Since the beginning, dedicated Ryan White HIV/AIDS Program grantees have continually invented and improved upon models of HIV care, to meet the evolving needs of their patients, as they grow up—and grow older—with HIV/AIDS. Despite increasing clinical complexity and a growing patient population, Ryan White HIV/AIDS Program grantees continue to deliver high-quality, patient-centered HIV primary care and a range of supportive services in a dynamic epidemic. “You don’t know what is going to work until it works; if it works you have a model. If it doesn’t, figure out why, fix it, redesign it, and try it again,” says Garcia.

### Ryan White’s Toolbox for Providers

The Ryan White HIV/AIDS Program supports and develops a range of tools and resources for providers dealing with an aging patient population. In 2011, HRSA published a comprehensive guide to clinical care for HIV/AIDS, which is available at <http://hab.hrsa.gov/deliverhivaidscale/clinicalguide11/>

AETCs continue to keep providers up to date on advances in research and clinical care. Guidelines, curricula, and additional information are available at <http://hab.hrsa.gov/deliverhivaidscale/clinicalguide11/>

HRSA’s HIV Quality Improvement (HIVQUAL) Program provides onsite technical assistance to Ryan White grantees. HIVQUAL teaches sites to systematically plan, implement, and evaluate quality improvement programs. In 2011, the National Quality Center’s Quality of Care Award for Quality Improvement Activities went to Brooklyn’s Special Treatment and Research (STAR) Health Center, for incorporating primary care indicators relevant to the clinical needs of their aging HIV patients: diabetes management and cardiovascular health. STAR’s clients reflect the epidemic: More than half of their 1,129 HIV patients are over 45; many are diabetic, and at risk for cardiovascular events. A description of the indicators, interventions, and results is available at [www.hivqualus.org/files/10051/HIVQUAL-US%20Brief%207.pdf](http://www.hivqualus.org/files/10051/HIVQUAL-US%20Brief%207.pdf).

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